

# SE MRC College Algebra Content Review

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## Polynomial and Rational Inequalities Section 3.6

### Learning Objectives:

1. Solve polynomial inequalities.
2. Solve rational inequalities.
3. Solve problems modeled by polynomial or rational inequalities.

2. Solve the polynomial inequality and graph the solution set on a real number line. Express the solution set in interval notation.

$$3x^2 + 16x - 12 < 0$$

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1. Solve the polynomial inequality and graph the solution set on a real number line. Express the solution set in interval notation.

$$x^2 - 16x + 63 > 0$$

3. Solve the polynomial inequality and graph the solution set on a real number line. Express the solution set in interval notation.

$$x^2 \leq 6x - 6$$

4. Solve the polynomial inequality and graph the solution set on a real number line. Express the solution set in interval notation.

$$x^3 - 5x^2 - x + 5 \geq 0$$

6. Solve the following rational inequality and graph the solution set on a real number line. Express the solution set in interval notation.

$$\frac{x + 9}{x + 4} > 0$$

5. Solve the polynomial inequality and graph the solution set on a real number line. Express the solution set in interval notation.

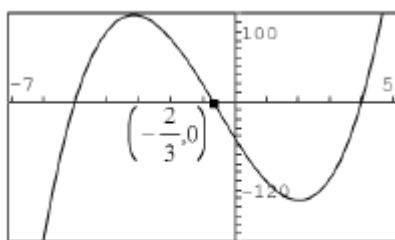
$$x^3 + x^2 + 4x + 4 > 0$$

7. Solve the following rational inequality and graph the solution set on a real number line. Express the solution set in interval notation.

$$\frac{x + 2}{x + 9} < 2$$

8. Use the graph of the polynomial function to solve the inequality.

$$3x^3 + 5x^2 \geq 58x + 40$$



$$f(x) = 3x^3 + 5x^2 - 58x - 40$$

**Answer Key:**

1.	$(-\infty, 7) \cup (9, \infty)$
2.	$\left(-6, \frac{2}{3}\right)$
3.	$[3 - \sqrt{3}, 3 + \sqrt{3}]$
4.	$[-1, 1] \cup [5, \infty)$
5.	$(-1, \infty)$
6.	$(-\infty, -9) \cup (-4, \infty)$
7.	$(-\infty, -16) \cup (-9, \infty)$
8.	$\left[-5, -\frac{2}{3}\right] \cup [4, \infty)$